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BROTHERLY COOPERATION BETWEEN THE USSR AND CHINA

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BROTHERLY COOPERATION BETWEEN THE USSR AND CHINA

[Following is a translation of the seven-part article "Brotherly Cooperation" by various authors in the Russian periodical Nauka i zhizn' (Science and Life), Vol. 26, No. 9, September 1959, Moscow, pages 2-8, 12.]

1 October 1959 is the tenth anniversary of the proclamation of the CPR [Chinese People's Republic]. Along with the 600 million people of China, this anniversary is joyfully being celebrated by the Soviet people, the workers of all the countries of the socialist camp, and all progressive mankind.

The victory of the Chinese Revolution dealt a mighty blow to the system of imperialism, decisively changing the correlation of forces on the international scene in favor of socialism, peace, and progress.

Recent years in China have been marked by great socialist transformations. The First Five-Year Plan laid a firm foundation for the industrialization of the country. The socialist order has been established in rural areas. The people's power has put an end everywhere to hunger and want -- the constant companions of the working people in the old China. All these remarkable achievements have been won under the leadership of the Communist Party of China -- the great and directing force of the Chinese people.

Unbreakable bonds of fraternal amity link the Soviet and Chinese peoples. This eternal amity has been strengthened by a mutual goal in the struggle for Communism. "We have," said Mao Tse-tung, "a common fate and draw a common breath with the Soviet Union and the whole socialist camp."

Filled with vigor and mighty energy, People's China is moving towards socialism. On this glorious holiday the Soviet people send the warmest congratulations to the fraternal Chinese people and wish them remarkable new victories in the building of socialism.

The editorial board of this journal is devoting the regular feature "We have as guests..." to the tenth anniversary of the Chinese People's Republic. Invited to this meeting, which was conducted jointly with the Society for Soviet-Chinese Friendship, were Soviet scholars and scholars of the CPR who are now in Moscow. In the name of the Society for Soviet-Chinese Friendship the guests were welcomed by V. P. Yelyutin, USSR Minister of Higher and Secondary Specialized Education.

REMARKABLE RESULTS

By Chu K'o-cheng, Vice-President of the Academy of Sciences of the Chinese People's Republic.

Science has developed comparatively rapidly in our country since the formation of the Chinese People's Republic. This has been made possible by the correct leadership of the Communist Party of China headed by comrade Mao Tse-tung, and by the aid which the Soviet people are giving to us.

Ten years is not a long time. But during this period there has been considerable improvement in the facilities of the scientific research institutes of China, and means for the conducting of scientific investigations have increased many times, as has the number of scientific workers.

In 1949 there were 17 scientific research institutes in the Chinese People's Republic. At the present time, this figure has increased to 105 in the case of institutes under the Academy of Sciences alone.

It may be said that in almost every province and large city there are establishments conducting research in one or another branch of science. There are now in China 26 branches of the Academy of Sciences.

Ten years ago 270 scientific workers were employed in the scientific research institutes and establishments. Today this figure has increased by 10 times. And if we consider also the post-graduate research students, engineers, and administrative personnel, the total number of co-workers of the Academy of Sciences amounts to about 40,000.

Both quantitative and qualitative changes have taken place in our science. In China, in the course of the last decade, previously uninvestigated branches of science have appeared and the industrial utilization of atomic energy has begun to be developed. Research has begun on the use of isotopes in medicine, agriculture and metallurgy. Previously we had no electronic calculating machines. Now, with the aid of Soviet Scientists, we have built and are developing this important branch of modern science and technology within the Academy of Sciences. Radio astronomy is being developed successfully in China.

Both the training of new cadres and the publishing activities of the Academy of Sciences are being actively promoted on a broad scale. At present 43 journals are being published by establishments under the Academy of Sciences. A special "Science and Technology" university has been set up. Here future specialists are trained in atomic physics, electronics, geophysics, organic chemistry, automation, and telemetry.

In the next few years science should be able to give even more effective assistance to the development of the national economy of the CPR, contributing in many ways to the building of socialism in our country. For this purpose a 12-year plan has been drawn up for the development of science and technology in the Chinese People's Republic. About 600 Chinese scientists participated in the scientific assemblies and sessions held in the course of drafting the plan. Representatives of the Academy of Sciences USSR also took part in drawing up this plan.

All Chinese scholars recognize that Soviet science is an advanced science and that it is thus necessary for us to learn from our colleagues, the Soviet scholars. This is why we heartily welcome this meeting of Soviet and Chinese scholars at a round table symbolizing the brotherly cooperation between our countries.

"IN THE GORGE OF THE 'THREE GATES'"

By Fang Chun-yun, professor and Deputy Minister of Water
Economy and Electric Power CPR

Even in the recent past the water economy of China was, as is well known, in a devastated condition. For example, the Huang Ho frequently flooded the surrounding regions, while in some years there were terrible droughts. During the 10 years of the existence of the people's republic in China definite achievements have been made. One of the most important tasks which Mao Tse-tung put forward has been accomplished: "Control the Huang Ho!" Many irrigation works have been constructed along this river. A large dam is being built in the gorge of the "three gates". Soviet specialists have taken part in drawing up a multi-purpose plan for the control of this river.

Not only in the basin of the Huang Ho, but also in many other regions of China, various hydraulic engineering structures have been built. Not much more time need elapse before it will be possible to consider the flood problem in China as solved.

As relates to irrigation our achievements in this sphere are also quite apparent, particularly after the people's communes were set up in China. The peasants are enthusiastically taking part in the solution of this problem.

The movement for the prevention of soil erosion has now assumed a mass scale. A net of ditches has been dug for the collection of water by means of terracing.

In addition to large water reservoirs, which are being used for the irrigation of enormous areas, many small water reservoirs and ponds have been built in China. In the past year alone, enough small water reservoirs were built to make possible the irrigation of 400,000,000 mu (27,000,000 hectares) of land. This is twice the area irrigated before the liberation of the country.

A struggle is now being waged to create in all plain areas irrigation systems to connect separate localities. This will provide for not only irrigation but also communications between distant regions.

Water reservoirs are also of great importance for the construction of hydroelectric stations on the rivers of China. With the aid of Soviet specialists many modern hydraulic engineering works have been built in our country. In the past year more than 1.7 million kw of electricity-generating capacity was put into operation. For the coming year the plan figure of 3.5 million kw has been set.

At the present time, one of the main problems of the development of power sources in China is that of the utilization of the Yangtse River in the area around the city of Hankow. With a yearly capacity of 22 million kw the electric power station here will be the largest and most powerful in the world.

It will be constructed not only for the purpose of supplying power but also for assisting in the improvement and efficient use of land resources. About 20 organizations are working on these problems.

Another current problem on which Chinese scientists are working is the following. In Northwest China the climate is very arid, while in the south there is a surplus of water. It would be desirable to divert water from the abundant flow of the Yangtse River to the deserts of Northwest China. Many scientists are engaged in studying this problem, which is of great national economic significance.

In addition to these crucial problems a number of others may also be mentioned whose solution is engaging the minds of Chinese scientists. An interesting, though admittedly hypothetical or even fantastic, problem is that of digging a canal between Hankow and P'an-chow to connect the Liao Ho and the Yangtse. If this can be accomplished, it would permit the diversion of water to the northwest. Another current problem is that of the utilization of sea gulfs.

In conclusion I wish to emphasize once more that the successes which have been achieved in water economy and power have been made possible through the correct leadership of the Chinese Communist Party and the aid of Soviet scientists.

TRANSFORMING NATURE

By Professor Sung Ta-chen, doctor of biological sciences

The past year was the first year of the expanded building of socialism in China. In agriculture the large agriculture cooperatives have been transformed into people's communes.

One of the primary tasks of soil study under these conditions has been bringing order into the system of the division of land, since the previous agricultural cooperatives worked smaller plots of land than is the case with the communes.

In the past year, in the province of Kuangtung work has been done in each people's commune for the consolidation and planned allocation of land. The experience gained in this province is being applied throughout the country. In each province 50,000 to 100,000 persons have been engaged in one aspect or another of this problem. As a result of the guidance of the Party organs, the broad participation of the masses, and the application of scientific and technological processes, the work has been crowned with success and was done very quickly -- in the course of half a year. During this period, work was completed by the people's communes throughout the whole country. Soil maps have been compiled at a scale of 1:10,000 for the people's communes and at 1:500,000 for the provinces. Besides soil maps, plowing-depth and soil-improvement maps have been plotted, and research has been carried out on the utilization of local fertilizers.

All this has helped the Chinese people to develop efficient plans for the development of agriculture, livestock raising, forestry, subsidiary industries, and fishing. Planning has been applied also to the measures carried out last year for the purpose of effecting an increase of over-all agricultural production (deep plowing, irrigation, selection of seeds, etc.). Work plans for the future have been drawn up in each people's commune.

The increase of agricultural production in China requires also an improvement of theoretical researches in the field of soil science. In this field the Soviet scientists have more advance experience. We wish to study this experience and to apply it to Chinese agriculture.

But the tasks of soil science are not limited to those cited. Science must actively assist in the transformation of nature. It is known that there exist in China great desert areas with arid and saline soils. To transform these into fertile soils is one of the tasks of soil scientists and the scientists of other disciplines. In the near future the desert areas of Northwest China will be transformed into a flourishing region suitable for the development of agriculture and livestock raising. For this we are also receiving aid from Soviet specialists.

We are confident that through the creative cooperation of Soviet and Chinese science still greater victories will be won in the development of the socialist agriculture of China.

WHAT IF LEARNED IN THE SOVIET UNION

By Shih Ping-san, engineer, faculty member of the
Hua-chung Polytechnical Institute

My specialty is industrial heat and power engineering, which is a new discipline in China. Cadres in this specialty first began training in the Hua-chung and Nanking Polytechnical Institutes only 3 years ago.

A great development has taken place in higher education in China in the past 2 or 3 years. To mention only 3 of the Hua-chung Polytechnical Institute, in the last 2 or 3 years many new departments and chairs have been set up, e.g., a shipbuilding section, metallurgical and chemical-technical departments, and a department of engineering physics.

A number of new disciplines have been introduced: telemetry and remote control, semiconductors, engineering physics, and others.

Until recently there were more than 4,000 students in our institute. Now the number has increased to 10,000. Specialists in the field of industrial power and heat engineering are making wide use of the experience of the Moscow Power Engineering Institute and the Kiev Polytechnical Institute.

Faculty members and specialists in the field of industrial power and heat engineering in China are mostly young comrades. Some of them have studied with Soviet specialists sent to China, while others, including myself, have been sent to the Soviet Union for study.

Now my period of study in the Moscow Power Engineering Institute is drawing to a close. Here I have acquainted myself under the supervision of Prof. P. D. Lebedev with scientific research work in the field of industrial power and heat engineering. Since the quantity of steam available was insufficient for the use of heat carriers, substitutes were used, e.g., high-temperature silicon-organic heat-carriers. The necessity for these substitutions can be seen in the well-known fact that steam at very high temperatures exerts great pressure, which is damaging to all heat-utilizing apparatus.

Another question to which Chinese specialists have devoted themselves is the utilization of waste products of production, for example, slag heat. In addition, they have studied the possibilities of using solar energy, since in China there are regions where the sun's energy can be utilized for 9 months of the year.

But my work at the Moscow Power Engineering Institute was not limited to these problems. I studied teaching and methodological work, practiced teaching and delivering lectures, and prepares my diploma research projects. Many hours were devoted to production practice and laboratory work.

Study at the Moscow Power Engineering Institute has been very valuable to me. In China I will attempt to apply all the knowledge which I gained in the course of my 2-year stay in the Soviet Union.

IN CLOSE COOPERATION

By S. V. Klopov, doctor of technical sciences, chief of the Amur Joint Expedition of the Council for the Study of Productive Forces under the Presidium of the Academy of Sciences USSR.

Three years ago Soviet and Chinese scientists began a joint investigation of the natural features and natural resources of the Amur River basin. And this is perfectly natural, since this vast territory, comprising about 2 million square kilometers, is almost equally divided between the Soviet Union and the CPR.

Only a small part -- less than 1 1/2% -- lies within the Mongolian People's Republic.

The scientific research work in the Amur basin, which was begun in accordance with an agreement between the USSR and the CPR, has as its purpose to find the most effective measures for the struggle against floods and for the multi-purpose utilization of the river. Along with water resources, the geological structure of the Amur basin is being studied. Geological, tectonic, and stratigraphic maps will be compiled and study made of the possibilities of finding mineral resources.

The soils and vegetation are being studied. This type of complex research constitutes a splendid basis for drawing up scientific plans for the development of the economies of the Soviet and Chinese halves of the Amur region.

The Chinese scientists present today have taken a very active part in the study of the Amur basin. Professor Chu K'o-cheng, vice-president of the Academy of Sciences CPR, is exercising general supervision over the investigations in the Chinese part of the Amur basin. Professor Fang Chun-yun, Deputy Minister of Water Economy and Electric Power CPR, is at the same time chief of the Heilunkiang joint expedition of the Academy of Sciences CPR, which is working with the Amur joint expedition of the Council for the Study of Productive Forces under the Presidium of the Academy of Sciences USSR. Professor Sung Ta-chen, doctor of biological sciences, heads the nature-study group of the Heilunkiang joint expedition.

As many as 70-80 scientific workers of different specialties from each country are taking part annually in the joint researches. At the meeting held in May of this year in Moscow of the Joint Soviet-Chinese Scientific Council on the Problem of the Amur River, a plan was approved for the completion of investigations ahead of schedule -- by mid-1960 -- and the results of the work already done were approved.

The joint investigations have shown that floods are doing great damage in the valleys of the middle and lower Amur and its tributaries: the Zen, Sungaria, and Ussuri. To remedy this situation, it is necessary to control the flow of water in the tributaries and also in the upper Amur, where freshets have been very destructive.

Selected along these rivers have been sites best suited for the construction of regulating water reservoirs and for powerful hydroelectric stations capable of generating electricity at a cost of 4-5 kopecks a kilowatt-hour. Hydroelectric stations along the Amur River can constitute connecting links between the power systems of the Soviet Far East and Northeast China. In China large hydroelectric stations are already being constructed at a rapid pace on the Sungaria River, and hydraulic engineering work is being done on a mass scale on many of the small and medium rivers of the Amur basin.

Geographers, hydrologists, and naturalists have developed a plan for classification of the soils, vegetation, and water resources of the Amur basin, and have drawn geomorphological, soil, geobotanical, and hydrological maps and diagrams of the various Amur basin regions with evaluations of pasturage, timber, and soil resources and the characteristics of their distribution. It has been determined that after regulating the waters, more than 10 million hectares of new land will be available for agriculture on the Chinese side of the basin and about 2 million hectares on the Soviet side.

Geologists on the Chinese side have studied almost a half million square kilometers of previously uninvestigated areas and have compiled geological and tectonic maps and stratigraphic and metallogenetic diagrams for this area. Specialists in the field of river transportation have demonstrated the feasibility of the construction of water connections between the Amur and the Tatar Gulf, and the Yellow Sea, and have planned the measures necessary for the development of navigation routes between the USSR and the CPR.

Economists have investigated natural flood damages and the damages caused by flooding in connection with hydroelectric construction. The first has been found to be enormous and the second - insignificant. The main relationships and economic advantages have been determined which will follow from the future linking of the power systems of the Soviet and Chinese halves of the Amur region. Calculations have shown that high-voltage power line connections between the two areas will effect great savings in installed capacities. The Amur basin fishing resources have been studied. In the rivers of this basin there are more than 100 species of fish, and recommendations have been drafted for maintaining and increasing their populations.

The joint investigations of Soviet and Chinese scientists in the Amur basin have made it possible for them to become well acquainted with each other and to form ties of personal friendship. These investigations constitute a new type of scientific cooperation between the fraternal socialist countries for the purpose of their economic development.

CHINESE MEDICINE

By I. G. Kochergin, corresponding member of the Academy of Medical Sciences USSR, deputy minister of Public Health USSR.

It is difficult in a short address to describe all the great accomplishments of the Chinese people in the past ten years in the guarding of health.

Some notion of these successes is given by the figures and facts which I will cite.

Before the liberation of the country, public health in China was in a condition of great neglect. Epidemic diseases were a terrible scourge. Cholera, plague, smallpox, and other diseases brought death to many tens of thousands of persons. And this is not surprising, since for the 600 million people in China there were only about 14,000 physicians with higher medical educations. Mortality among children was the highest in the world. Medical care was available only to the prosperous segments of the population.

In the course of a decade of public health work in the new China a great step forward has been taken. In comparison with 1947, the number of hospitals has increased fivefold and the number of hospital beds ten times.

In rural areas the number of hospitals has increased 30 times. Many specialized medical establishments have been built: dispensaries, polyclinics, sanatoria, children's health centers, maternity homes. In the last 9 years alone, almost 1 1/2 times more physicians have been trained than in three quarters of a century before the liberation. There are now a half million physicians in public health work in China.

Other remarkable facts are concealed in these figures. Such common diseases as cholera, smallpox, plague, and several parasitic illnesses have been eliminated. The mortality rate, of measles, scarlet fever, dysentery, and tuberculosis has been considerably reduced. In the old China about 2 million persons died from tuberculosis annually. At the present time, in the city of Peking the mortality rate of this disease among infants up to one year of age has been reduced almost 7 times in comparison with 1950, and among adults 4 times.

A few words on the Chinese pharmaceutical industry. Here there are clear evidences of advances. Large chemical-pharmaceutical plants have been built. Complex medical apparatus, instruments, and equipment are being made in China, including X-ray equipment, and microscopes, and a large variety of modern medicinal preparations are being produced. In 1953 a large new plant built with the aid of the Soviet Union went into production making antibiotics.

A bright page in the development of public health services in China is the mass movement for high sanitation levels in cities and villages. Major attention has now been turned to the elimination of four pests: flies, mosquitoes, rodents, and sparrows. Already by the end of last year there were more than a thousand counties and cities in which these "four evils" were basically eliminated. This fact is also interesting: in the city of Peking rubbish which had been accumulating for 500 years has been removed from the territory of the Imperial Palace. In the district surrounding the palace, two lakes have been cleaned and made sanitary; these were notorious for their stench, flies, and mosquitoes and were foci for the spread of malaria and other diseases. Now this area has been transformed into a beautiful Park of Rest for the workers.

The achievements of Chinese public health work owe a great deal to an intensification of the role of medical science.

In People's China a large network of scientific-research medical institutes, scientific stations, laboratories, etc., has been built. In 1956 the Academy of Medical Sciences was established. Scientific research work is being done under a general State plan. The 12-year plan drawn up for the development of science provides for research in 50 pressing problems of medicine. Special attention has been given to research in the field of preventive medicine and to the scientific drawing up of a broad program of joint measures against parasitic, virus, and epidemic diseases with natural foci.

Varied work is being done in the preparation of new and the improvement of existing medical preparations. In addition to the synthesis of chemical preparations, the attention of Chinese specialists is focused on medicinal herbs. And this is understandable, since in Chinese medicine about 80% of the medicines used are of vegetable origin. In recent years scientists have been actively searching also for new antibiotics, particularly anti-virus and anti-tumor ones. Under the plan for scientific research work, about 100,000 soil samples are to be studied annually in conjunction with the Soviet specialists. From these samples microbe-antagonists are to be isolated as possible producers of antibiotics.

An important task confronts investigators in the field of Chinese national medicine -- the study and generalization of the rich practical experience and the scientific basis regarding numerous means and methods. Among these, of special interest are such popular and common methods of treatment as acupuncture and cauterization. These methods are being studied in the laboratories and hospitals of the USSR. In the near future a guide to Chinese national medicine will be published in the Russian language.

The facts and figures cited are evidence that under the leadership of the Communist Party and the People's Government of China the cause of the preservation of the health of the workers is being successfully furthered and will continue to be developed and improved in fulfilling the great tasks of building a socialist society.

TOWARDS NEW DISCOVERIES

By A. G. Vologdin, corresponding member of the
Academy of Sciences USSR

As a geologist and paleontologist I have watched with great interest the work being done in these fields in China. The science of paleontology, the study of the development of organic life in the geological past, was developed to some extent there even before 1949 when many foreign scholars worked in the country, though, it is true, not primarily in the interests of China. But at the same time, research was being carried out in the country by many talented Chinese scholars whose work has received world recognition. Among them was Yang Chung-chen, now director of the Institute of Vertebrate Paleontology in Peking; and Li Ssu-kuang, now vice-president of the Academy of Sciences CPR.

In this period famous excavations were carried out in China at the sites of ancient man of the glacial period. Remarkable results were achieved in excavations yielding fossils of Sinanthropus pekingensis at the village of Cho-wu-kow-tiang near Peking. Unfortunately, some of the materials excavated were destroyed during the war; others were sent overseas where they have enriched many museums. In recent years the labors of Chinese scholars have unearthed very many interesting new fossil materials. An important finding relating to ancient man in China was made in Chien-yang. Systematic excavations are being continued at Cho-wu-kow-tiang, where scholars are constantly finding new evidence on ancient man in China and his culture. On the basis of the skull of a Peking man found at Cho-wu-kow-tiang, the Soviet sculptor M. M. Gerasimov has reconstructed an ancient Chinese man, a bas-relief of which has become the emblem of the Chinese Paleontological Society.

In the last 10 years the paleontologists of China have had great successes in the most diverse aspects of this discipline. The Party and Government of the Chinese People's Republic attach great importance to the development of paleontological investigations, because these contribute to revealing the geological structure of the country and to the search for mineral resources. A Paleontological Institute has been set up under the Chinese Academy of Sciences, as well as an Institute of Stratigraphy and Paleontology under the Ministry of Geology, a paleontological laboratory under the Ministry for the Petroleum Industry, and many other establishments.

In 1956 the First Congress of Chinese Paleontologists was held. The congress obliged each scholar to develop his personal plan for research in such a way as to combine paleontological work with prospecting and surveying as regards mineral deposits.

And this has brought excellent results. The work of the paleontologists has made possible a profound analysis of geological processes in southeast Asia. Of particular importance has been the work of the famous Chinese paleontologist and geologist Li Ssu-kuang. A remarkable achievement of Chinese paleontology was the publication in 1957 of a five-volume reference work on Chinese fossils. Of these, three volumes are devoted to nonvertebrate forms, one to vertebrate animals, and one to fossil land flora. The material in three volumes, taken from all geological eras from the Cambrian to the Pliocene and from the Early Quaternary period, is the basis for the preparation of a geological map of China and for many types of prospecting for mineral resources. This work represents a great contribution to world science.

Designed to continue on a much larger scale the joint investigations conducted for many years by paleontologists of the Soviet Union and China, in June of this year in Peking a large Chinese-Soviet paleontological expedition began its work. In the course of the next 5 to 7 years this expedition will study vertebrate fossils in Northern, Eastern, and Western China.

Our friends, our Chinese comrades and colleagues, are receiving constant assistance from Soviet scholars. Soviet paleontologists visited the Chinese People's Republic in 1955 on the invitation of the Chinese Academy of Sciences. In the following year the Chinese Academy of Sciences sent its own delegation to the Soviet Union. The paleontologists of our two great countries have welcomed the opportunity to exchange experience both in personal meetings and by means of printed works.

The achievements of Chinese paleontology are evidence of the remarkable prospects for the development of this science in the near future. In the period of fulfillment of the first 12-year plan for the development of Chinese science, the number of paleontologists is to be increased 10 times. This will make it possible to carry out a tremendous amount of work, and to make new discoveries valuable both for the development of science and for the unearthing of new mineral resources. The joint investigations of Chinese and Soviet paleontologists will be very useful to the national economies of China, Mongolia, and the Soviet Union.

END

FIGURE APPENDIX

- Figure 1. Academician Chu K'o-cheng.
- Figure 2. Chinese and Soviet scholars on a visit to the editorial board of our journal and the Society of Soviet-Chinese Friendship.
- Figure 3. Professor Fang Chun-yun
- Figure 4. Fang Chun-yun, V. P. Yelyutin, and Chu K'o-cheng.
- Figure 5. Engineer Shih Ping-san.
- Figure 6. Sung Ta-chen (left) and S. V. Klepov.
- Figure 7. I. G. Kochergin.
- Figure 8. A. G. Vologdin.